

Date: (1985)

A 80915

Subject: Results of acute toxicity tests conducted with Cadmium at ERL,  
Narragansett

From: John A. Cardin *jac*

CAD, FISH

To: David Hansen

memo to                     , U.S. EPA, Narragansett, RI: 5 p.

The following tables summarize results of acute toxicity tests conducted using *Menidia menidia* and *Pseudopleuronectes americanus*. Test methods were generally those recommended by ASTM. Details on methodologies used, test conditions and results can be obtained from ERL, Narragansett.

TEST SPECIES: *Menidia menidia*  
LIFE STAGE: juvenile  
BIOASSAY METHOD: Static Unrenewed  
REPLICATES/CONCENTRATION: 2  
DURATION OF TEST: 96 Hours  
TOXICANT: Cadmium chloride  
SEAWATER: Filtered Natural Seawater  
TEMPERATURE: 16 C  
SALINITY: 30 PPT  
INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
30000 PPB	15	14	93.3%
10000 PPB	17	5	29.4%
7000 PPB	15	0	0%
5000 PPB	15	2	13.3%
3000 PPB	15	1	6.7%
1000 PPB	15	0	0%
CONTROL	14	0	0%

LC-50: 13652 PPB  
CONFIDENCE LIMITS: 10547 - 19947 PPB  
CALCULATION METHOD: Probit

(Cont.)

*WATER, AQUA  
MOR*

*37 OK*

TEST SPECIES: Menidia menidia  
 LIFE STAGE: 1 Day Old Larvae  
 BIOASSAY METHOD: Static Unrenewed  
 REPLICATES/CONCENTRATION: 4  
 DURATION OF TEST: 96 Hours  
 TOXICANT: Cadmium chloride  
 SEAWATER: Filtered Natural Seawater  
 TEMPERATURE: 20 C  
 SALINITY: 30.4 PPT  
 INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
32000 PPB	116	116	100%
10000 PPB	96	96	100%
3200 PPB	58	58	100%
1000 PPB	103	73	70.9%
320 PPB	88	23	26.1%
CONTROL	110	21	19.1%

LC-50: 577.4 PPB  
 CONFIDENCE LIMITS: 486.3 - 675.1 PPB  
 CALCULATION METHOD: Probit

TEST SPECIES: Menidia menidia  
 LIFE STAGE: Adults  
 BIOASSAY METHOD: Static Unrenewed  
 REPLICATES/CONCENTRATION: 12  
 DURATION OF TEST: 96 Hours  
 TOXICANT: Cadmium chloride  
 SEAWATER: Filtered Natural Seawater  
 TEMPERATURE: 14 C  
 SALINITY: 30 PPT  
 INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
30000 PPB	35	35	100%
10000 PPB	37	31	83.8%
3000 PPB	34	16	47.1%
1000 PPB	29	13	44.8%
300 PPB	33	3	9.1%
CONTROL	35	0	0%

LC-50: 2032 PPB  
 CONFIDENCE LIMITS: 1388 - 2883 PPB  
 CALCULATION METHOD: Probit

(Cont.)

TEST SPECIES: Menidia menidia  
 LIFE STAGE: Juveniles  
 BIOASSAY METHOD: Static Unrenewed  
 REPLICATES/CONCENTRATION: 2  
 DURATION OF TEST: 96 Hours  
 TOXICANT: Cadmium chloride  
 SEAWATER: Filtered Natural Seawater  
 TEMPERATURE: 14 C  
 SALINITY: 30 PPT  
 INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
30000 PPB	47	24	51.1%
10000 PPB	42	6	14.3%
3000 PPB	43	0	0%
1000 PPB	50	0	0%
300 PPB	39	0	0%
CONTROL	39	0	0%

LC-50: 28532 PPB  
 CONFIDENCE LIMITS: 21958 - 43048 PPB  
 CALCULATION METHOD: Probit

TEST SPECIES: Menidia menidia  
 LIFE STAGE: 1 Day Old Larvae  
 BIOASSAY METHOD: Static Unrenewed  
 REPLICATES/CONCENTRATION: 4  
 DURATION OF TEST: 96 Hours  
 TOXICANT: Cadmium chloride  
 SEAWATER: Filtered Natural Seawater  
 TEMPERATURE: 20 C  
 SALINITY: 30.4 PPT  
 INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
25000 PPB	42	42	100%
10000 PPB	44	44	100%
5000 PPB	42	42	100%
1000 PPB	41	18	43.9%
500 PPB	44	5	11.3%
CONTROL	41	0	0%

LC-50: 1054 PPB  
 CONFIDENCE LIMITS: 883.4 - 1358 PPB  
 CALCULATION METHOD: Probit

(Cont.)

TEST SPECIES: Pseudopleuronectes americanus  
LIFE STAGE: 1 Day Old Larvae  
BIOASSAY METHOD: Static Unrenewed  
REPLICATES/CONCENTRATION: 3  
DURATION OF TEST: 96 Hours  
TOXICANT: Cadmium chloride  
SEAWATER: Filtered Natural Seawater  
TEMPERATURE: 5 C  
SALINITY: 30 PPT  
INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
33000 PPB	50	50	100%
10000 PPB	56	6	10.7%
3300 PPB	49	5	10.2%
1000 PPB	52	7	13.5%
330 PPB	51	3	5.9%
CONTROL	54	2	3.7%

LC-50: 14297 PPB  
CONFIDENCE LIMITS: 12111 - 17202 PPB  
CALCULATION METHOD: Moving Average Analysis

TEST SPECIES: Pseudopleuronectes americanus  
LIFE STAGE: 1 Day Old Larvae  
BIOASSAY METHOD: Static Unrenewed  
REPLICATES/CONCENTRATION: 4  
DURATION OF TEST: 96 Hours  
TOXICANT: Cadmium Chloride  
SEAWATER: Kester's Formulation Artificial Seawater  
TEMPERATURE: 10 C  
SALINITY: 30 PPT  
INVESTIGATOR: J.A. Cardin

NOMINAL CONCENTRATION	NUMBER EXPOSED	NUMBER DEAD	% DEAD
5000 PPB	91	91	100%
2500 PPB	105	103	98.1%
1000 PPB	105	83	79%
500 PPB	102	39	38.2%
CONTROL	103	15	14.5%

LC-50: 602.3 PPB  
CONFIDENCE LIMITS: 521.3 - 677.4 PPB  
CALCULATION METHOD: Probit

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Updated October 5, 2005

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Criteria	Description	Yes/No
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